**How are greenhouse gas emissions being addressed internationally, nationally, regionally, and locally?**

**International: The United Nations efforts on climate change:**

As the first international effort to address global climate change, the United Nations Framework Convention on Climate Change became a working entity of the United Nations on March 21, 1994. The Framework was initially drafted in 1992, but required signatory countries to come into force. The objective of this convention was to ensure that participating governments engage the following:

- Gather and share information on greenhouse gas emissions, national policies and best practices
- Launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- Cooperate in preparing for adaptation to the impacts of climate change" (UNFCCC).

According to the United Nations Framework Convention on Climate Change, "[t]he ultimate objective of this Convention… is to achieve… stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." (UNFCCC 1992).

In 1997, the UNFCCC was convened in the city of Kyoto, Japan wherein the nations in attendance negotiated an international treaty aimed at reducing global Greenhouse Gas emissions; the treaty was aptly named the Kyoto Protocol. The signatories to this treaty pledged to cut the emissions of carbon dioxide, as well as five other greenhouse gases by 5.2% from their 1990 levels by the year 2012. The treaty became effective once 55 % of all greenhouse gas emissions would be addressed by the total of the countries signing. According to the UNFCCC, "[a]s of 7 July 2006, 164 states and regional economic integration organizations have deposited instruments of ratifications, accessions, approvals or acceptances" (UNFCCC).

As the world's first international treaty addressing the problem of anthropogenic climate interference, the Kyoto Protocol has been considered a first step in tackling this impending global environmental crisis. The United States, while originally signing the treaty, has since abandoned it's involvement under President George W. Bush – citing the economic burden it would bear in the cost of implementation. Because the Kyoto Protocol required enough countries responsible for 55% of all greenhouse gas emissions for enactment, once the United States withdrew the future of the effort was in doubt. Richard A. Kerr argued that "without the U.S., all of Europe, Japan, and Russia are needed" (Kerr, 2000). According to the BBC, in November of 2004, Russia officially ratified the treaty, which managed to push participant countries to the 55% mark (BBC 2005). Following Russia's ratification, the treaty became effective on February 16, 2005. While many countries are facing difficulties in reducing their emissions by the projected date, the continued efforts of the United Nations Framework Convention on Climate Change serve as a launching pad for energy policy reformation and global climate change awareness.

**U.S. Initiatives**
The following legislation on greenhouse gas emission reductions has been introduced in Congress during 2006 (except for the McCain-Lieberman bill which was introduced in 2003). A brief synopsis of each is below:

**Global Warming Reduction Act:** U.S. Senators John Kerry (D-MA) and Olympia Snowe (R-ME) on Friday, October 3, 2006 introduced the Global Warming Reduction Act, a bipartisan measure to reduce the emissions of greenhouse. The legislation sets greenhouse gas emissions targets that the best science available suggests will keep temperatures below the danger point. (Excerpted from Kerry/Snowe press release 10/3/06)

Global Warming Reduction Act Highlights:

- Requires that the U.S. freeze emissions in 2010 and then calls for a gradual reduction each year to 65 percent below 2000 emissions levels by 2050. The bill achieves these targets through a flexible, economy-wide cap-and-trade program for greenhouse gas emissions.

- Requires that passenger vehicles reduce their global warming pollution.

- Includes measures to advance technology and reduce emissions through clean, renewable energy and energy efficiency in the transportation, industrial and residential sectors.

- Requires the US to derive 20% of its electricity from renewable sources by 2020.

- Includes a resolution expressing the urgent need for President Bush to re-engage in international climate negotiations.

- Establishes a National Climate Change Vulnerability and Resilience Program to help communities assess their vulnerability to climatic changes and shorter term climatic variations - including changes and variations resulting from human activities - and better prepare for it.

**Safe Climate Act (H.R. 5642):** The Safe Climate Act (H.R. 5642) is legislation introduced in June, 2006 by Representative Henry Waxman. The bill is a long-term, science-based solution to global warming that is designed to protect future generations from the worst effects of global warming. (Excerpted from U.S PIRG letter of support, 8/19/06)

In 1992, the U.S. and most of the world's nations agreed to the United Nations Framework Convention on Climate Change, which has the objective of stabilizing atmospheric greenhouse gas concentrations at a level that would prevent "dangerous anthropogenic interference" with the climate system. The Safe Climate Act seeks to achieve this objective and help prevent global temperatures from crossing the tipping point. To help achieve that goal, the bill reduces U.S. emissions of global warming pollution to 1990 levels by 2020 and to 80% below 1990 levels by 2050.

Safe Climate Act highlights:

- Initially, the bill reduces U.S. emissions gradually by freezing emissions at 2009 levels in 2010, then reducing emissions by roughly 2% per year from 2011 to 2020. These cuts can be achieved using existing technologies, such as hybrid vehicles, wind, and solar power.
- After 2020, the bill cuts emissions by roughly 5% each year, as more advanced technologies, such as zero-energy buildings and biofuels from waste materials, become widely available. By 2050, emissions will be 80% lower than in 1990.
- To help achieve the reductions, the bill requires gains in energy efficiency, increased use of renewable energy, and cleaner cars.
- The bill also provides flexibility to help companies meet the pollution-reduction goals through a "cap-and-trade" program.

**Global Warming Pollution Reduction Act:** Sen. Jim Jeffords (I-VT) on July 26, 2006 introduced a bill setting firm emissions reduction targets necessary to avoid the worst effects of global warming. The Global Warming Pollution Reduction Act calls for carbon dioxide (CO2) and other heat-trapping emissions to be reduced to 80 percent below 1990 levels by 2050. (Excerpted from Union of Concerned Scientists press release 7/20/06)

The main objective of the bill is to stabilize atmospheric concentrations of heat-trapping gases at or below 450 parts per million (ppm CO2 equivalent). Staying under the 450 ppm threshold requires cutting global emissions roughly in half from today's levels by mid-century. The Jeffords bill takes an incremental approach to reaching this goal.

Global Warming Pollution Reduction Act highlights:

- U.S. emissions would decrease two percent each year from 2010-2020 and would be cut by 26 percent by 2030, 53 percent by 2040 and fully 80 percent by 2050. The bill allows for acceleration of the emission reductions if necessary to stay below the target.
- Provides for increasing our reliance on clean renewable energy sources.
- Increases targets for energy efficiency.
- Provides for testing carbon capture and storage technologies.
- Reduces heat-trapping emissions from passenger vehicles.
- Re-engages the United States in international negotiations on global warming.

**Keep America Competitive Global Warming Policy Act of 2006:** : In March 2006, Representatives Tom Petri (R-WI) and Tom Udall (D-NM) introduced the "Keep America Competitive Global Warming Policy Act of 2006" (H.R. 5049). This legislation establishes a mandatory, market-based trading program that would slow the projected increase in global warming emissions. However, the bill does not cap emissions and therefore would not reduce emissions from today's levels. (Excerpted from U. S. PIRG analysis April 2006)

Keep America Competitive Global Warming Policy Act of 2006 highlights:

- Requires fossil fuel producers and importers, including owners and operators of natural gas pipelines and processing plants, oil refineries, and coal mines and preparation plants, among others, to transfer to EPA a number of emission

"allowances" equal to the number of metric tons of carbon that would be emitted or produced when the fuel is burned.
- The bill directs EPA to distribute a portion of the emission allowances to polluters for free in order to offset any expected loss of profits by each industry sector as a whole.
- The bill caps the initial cost of allowances at just under $7 per metric ton of carbon dioxide equivalent. Sources that do not have enough allowances to cover their emissions could reduce their emissions, buy allowances on the market, or buy allowances for $7 per metric ton from the government. Sources that reduce their emissions and have excess allowances could bank those allowances for later use or sell them to other sources.

**Climate Stewardship Act of 2003 (S.139)(Excerpted from Pew Foundation webite):**
On October 30, 2003, Senators Joseph I. Lieberman (D-CT) and John McCain (R-AZ) brought a revised version of their Climate Stewardship Act of 2003 (S.139) to a vote in the United States Senate. While the measured failed by a vote of 43 to 55, the vote was considered to show a growing bipartisan support for a genuine climate change policy.

The revised version of the bill would require the Administrator of the EPA to promulgate regulations to limit the greenhouse gas (GHG) emissions from the electricity generation, transportation, industrial, and commercial economic sectors (as defined by EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks*). The affected sectors accounted for approximately 85% of the overall U.S. emissions in the year 2000. The bill also would provide for the trading of emissions allowances and reductions through a National Greenhouse Gas Database that would contain an inventory of emissions and registry of reductions.

Climate Stewardship Act of 2003 (S.139) highlights:

- Target: The bill would cap the 2010 aggregate emissions level for the covered sectors at the 2000 level. The bill's emissions limits would not apply to the agricultural and the residential sectors. Certain subsectors would be exempt if the Administrator determined that it was not feasible to measure their GHG emissions. The Commerce Department would biennially re-evaluate the level of allowances to determine whether it was consistent with the objective of the United Nation's Framework Convention on Climate Change of stabilizing GHG emissions at a level that will prevent dangerous anthropogenic interference with the climate system.
- Allowances: An entity that was in a covered sector, or that produced or imported synthetic GHGs, would be subject to the requirements of this bill if it (a) owned at least one facility that annually emitted more than 10,000 metric tons of GHGs (measured in units of carbon dioxide equivalents – $MTCO_2E$); (b) produced or imported petroleum products used for transportation that, when combusted, would emit more than 10,000 $MTCO_2E$; or (c) produced or imported HFC, PFC and $SF_6$ that, when used, would emit more than 10,000 $MTCO_2E$. Each covered entity would be required to submit to the EPA one tradeable allowance for each $MTCO_2E$ directly emitted. Each petroleum refiner or importer would be required to submit an allowance for each unit of petroleum product sold that, when combusted, would emit one $MTCO_2E$. Each producer or importer of HFC, PFC, and $SF_6$ would be required to submit an allowance for each unit sold that, when

used, would emit one $MTCO_2E$. The Administrator would determine the method of calculating the amount of GHG emissions associated with combustion of petroleum products and use of HFC, PFC, and $SF_6$.

- Allocation of Allowances: The Secretary of Commerce would determine the amount of allowances to be given away or "grandfathered" to covered entities and the amount to be auctioned. The Secretary's determination would be subject to a number of allocation factors identified in the bill. Proceeds from the auction would be used to reduce energy costs of consumers and assist disproportionately affected workers.
- Flexibility Mechanisms: Covered entities would have flexibility in acquiring their allowances. In addition to the allowances grandfathered to them, covered entities could trade with other covered entities to acquire additional allowances, if necessary. Also, any entity would be allowed to satisfy up to 15% of its total allowance requirements by submitting (a) tradeable allowances from another nation's market in GHGs; (b) a net increase in sequestration registered with the National Greenhouse Gas Database established by the bill; (c) a GHG emission reduction by a non-covered entity registered with the Database; and (d) allowances borrowed against future reductions (as described below). A covered entity that agreed to emit no more than its 1990 levels by 2010 would be allowed meet up to 20% of its requirement through (a) international credits, (b) sequestration, and (c) registered reductions, but not (d) borrowed credits. An entity planning to make capital investments or deploy technologies within the next 5 years would be allowed to borrow against the expected GHG emission reductions to meet current year requirements. The loan would include a 10 percent interest rate.
- National Greenhouse Gas Database: The EPA Administrator would be required to implement a comprehensive system for GHG reporting, inventorying, and reductions registrations. Covered entities would be required to report their GHG emissions and non-covered entities would be allowed to register GHG emission reductions and sequestration. The National Greenhouse Gas Database would be, to the maximum extent possible, complete, transparent, accurate, and designed to minimize costs incurred by entities in measuring and reporting emissions. The Commerce Department, within one year of enactment, would be required to establish, by rule, measurement and verification standards and standards to ensure a consistent and accurate record of GHG emissions, emissions reductions, sequestration, and atmospheric concentrations for use in the registry.
- Penalty: Any covered entity not meeting its emissions limits would be fined for each ton of GHGs over the limit at the rate of three times the market value of a ton of GHG.
- Research: The bill would establish a scholarship program at the National Science Foundation for students studying climate change. The bill would also require the Commerce Department to report on technology transfer and on the impact of the Kyoto Protocol on the U.S. industrial competitiveness and international scientific cooperation.

**Senate Foreign Relations Committee resolution (SR312):**

On May 25, 2006 the U.S. Senate Foreign Relations Committee passed a resolution authored by Senators Lugar (R-IN) and Biden (D-DE) calling for U.S. re-engagement in international climate negotiations.

Resolution SR312 highlights: (Library of Congress 2006)

Whereas the United States has the capability to lead the effort against global climate change: Now, therefore, be it

*Resolved,* That it is the sense of the Senate that the United States should act to reduce the health, environmental, economic, and national security risks posed by global climate change and foster sustained economic growth through a new generation of technologies, by--

(1) participating in negotiations under the United Nations Framework Convention on Climate Change, done at New York May 9, 1992, and entered into force in 1994, and leading efforts in other international fora, with the objective of securing United States participation in agreements that--

(A) advance and protect the economic and national security interests of the United States;

(B) establish mitigation commitments by all countries that are major emitters of greenhouse gases, consistent with the principle of common but differentiated responsibilities;

(C) establish flexible international mechanisms to minimize the cost of efforts by participating countries; and

(D) achieve a significant long-term reduction in global greenhouse gas emissions; and

(2) establishing a bipartisan Senate observer group, the members of which shall be designated by the chairman and ranking member of the Committee on Foreign Relations of the Senate, to--

(A) monitor any international negotiations on climate change; and

(B) ensure that the advice and consent function of the Senate is exercised in a manner to facilitate timely consideration of any applicable treaty submitted to the Senate.

## Regional and State Initiatives

### *New England Governors and the Eastern Canadian Climate Change Action Plan*

The New England Governors and the Eastern Canadian Premiers[1] issued a Climate Change Action Plan in August 2001. Since that time, in response to the Climate Action

[1] The New England Governors' Conference (NEGC), an informal alliance since colonial days, was formally established in 1937 by the Governors of the six state region to promote New England's economic development. The NEGC's framework permits the Governors to work together, to coordinate and implement policies and programs which are designed to respond to regional issues.

The NEGC coordinates regional policy programs in the areas of economic development, transportation, environment, energy, and health, among others. Through these efforts, the Conference seeks to coordinate, effectively and cost-efficiently, regional policies that reflect and benefit the states.

Plan, many New England states have implemented state specific programs to reduce climate change impacts. These state specific programs cut across many sectors and include such goals as the following from the Massachusetts Climate Protection Plan[2]:

SHORT-TERM: Reduce GHG emissions to 1990 levels by the year 2010.

MEDIUM-TERM: Reduce GHG emissions 10% below 1990 levels by the year 2020.

LONG-TERM: Reduce GHG emissions sufficiently to eliminate any dangerous threat to the climate; current science suggests this will require reductions as much as 75-85% below current levels. Success in meeting this long-term goal will require major scientific and technological advances – advances that will take decades to achieve, requiring action to begin now.

Each state specific plan identifies many ways for residents, businesses and state government entities to reduce greenhouse gas emissions to meet state specific goals, including promoting alternative fuels, energy efficiency, alternative energy, greenhouse gas limits on fossil fuel power production, as well as building and procurement standards. Implementation of the plans at the state level is in various stages, presently.

***The Regional Greenhouse Gas Initiative (RGGI)***

RGGI is a cooperative effort by some Northeast and Mid-Atlantic states to discuss the design of a regional cap-and-trade program initially covering carbon dioxide emissions from power plants in the region. In the future, the RGGI may be extended to include other sector sources of greenhouse gas emissions, and greenhouse gases other than CO2.

In April 2003, New York Governor George E. Pataki sent letters to the 11 governors from Maine to Maryland, inviting their states' participation in discussions to develop a regional cap-and-trade program, covering carbon dioxide emissions from power plants within two years. By July 2003, the governor had received positive responses from eight of those governors, including those from Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont. The governors agreed to have their representatives participate actively in the discussions. After discussions got underway, representatives from the Eastern Canadian Provinces Secretariat and the Province of New Brunswick began observing the process. Maryland and Pennsylvania also send representatives to “observe” the process.

All of the Northeast and Mid-Atlantic states are in various stages of studying or implementing programs to reduce greenhouse gas emissions. For example, in April 2000, New Jersey adopted a statewide goal of reducing greenhouse gas emissions to 3.5% below 1990 levels by 2005. Similarly, the New England governors and the Eastern Canadian premiers issued a Climate Change Action Plan in August 2001, which calls for

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The NEGC also serves as the New England Secretariat for the Conference of New England Governors and Eastern Canadian Premiers. The Conference of New England Governors and Eastern Canadian Premiers, which first met in 1973, is a unique, inter-regional, bi-national organization.

the reduction of greenhouse gases to 10% below 1990 levels by 2020. New York's State Energy Plan calls for the reduction of the state's carbon emissions to 5% below 1990 levels by 2010 and to 10% below those levels by 2020. The regional cap-and-trade program will assist all participating states in reaching such state-specific goals.

In December of 2005, RGGI participants signed a Memorandum of Understanding to implement a CO2 cap and trade program. Massachusetts and Rhode Island decided not to continue as formal participants in the RGGI process, although they do continue as "observers" of the process. Due to a lack of a true cost cap mechanism, Massachusetts has decided to implement its own rule which it has had on the books since 2001, namely 310 CMR 7.29. Soon thereafter, Maryland also passed legislation, which compels it to join RGGI by 2009, predicated on a favorable outcome of an electric reliability study on the impacts from RGGI.

In May of 2006, RGGI issued a Model Rule with the comment period ending in late May 2006. The Model Rule was issued in August 2006.

***Western Governors' Association***

Made up of a coalition of governors from 18 states and three U.S. flag Pacific islands, the Western Governors' Association is meant to identify Western interests, form policy and promote regional concerns at the federal level. (www.ef.org). Recently in June 2006, led in part by Governor Schwarzenegger at the annual meeting of the Western Governors' Association, the governors adopted three resolutions regarding energy issues.

The first approved a two-year report that recommends a way to achieve a more clean and diversified energy portfolio in ten years. It included a call to Congress to pass federal tax credits for energy efficiency investments. It also restated the four goals asserted in the June 2004 resolution that were intended to increase renewable energy and energy efficiency. The goals included the development of 30,000 megawatts of clean energy by 2015, a 20% increase in energy efficiency by 2020, an ability to meet the West's transmission needs for the next 25 years, and to enable the West to respond to new environmental challenges.

The second calls for more investment in ethanol, biodiesel, electricity, natural gas, and the transmission grid needed to support it. The resolution was designed to call attention to the country's dependence on foreign oil as a national security risk and environmental concern.

The third resolution calls on the Western states to take steps to reduce greenhouse gas emissions. The resolution urges federal agencies to invest in climate change research and support coordinated international research on the issue. However, the resolution does not form a coalition of states to address the issue formally at a regional level. Instead, the resolution advises Western states to take heed of the efforts of other states that are implementing measures to address climate change.

***West Coast Governors' Global Warming Initiative***

In 2003, the Governors of the three West Coast states, California, Oregon, and Washington, announced an initiative to coordinate their states' policies to address global

warming. (www.pewclimate.org). In November 2004, the governors' approved a series of detailed recommendations (36 total) to address global warming, including:

- Set new targets for improvement in performance in average annual state fleet greenhouse gas emissions.
- Collaborate on the purchase of hybrid vehicles.
- Establish a plan for the deployment of electrification technologies at truck stops in each state on the I-5 corridor, on the outskirts of major urban areas, and on other major interstate routes.
- Set goals and implement strategies and incentives to increase retail energy sales from renewable resources by one percent or more annually in each state through 2015.
- Adopt energy efficiency standards for eight to 14 products not regulated by the federal government, establishing a cost-effective efficiency threshold for all products sold on the West Coast.
- Incorporate aggressive energy efficiency measures into updates of state building energy codes, with a goal of achieving at least 15 percent cumulative savings by 2015 in each state.
- Organize a West Coast Governors' conference in 2005 to inform policymakers and the public of climate change research concerning the West Coast states.

Currently each state is taking individual steps towards reaching these recommendations. The executive order issued by Governor Schwarzenegger as well as the CAT report (described below) are both derivatives of the initial West Coast Governors' Global Warming Initiative.

***California Climate Action Initiative***

On June 1, 2005, California Governor Arnold Schwarzenegger signed an executive order that established greenhouse gas[3] targets of 2000 emissions levels by 2010, of 1990 emissions levels by 2020, and of 80% below 1990 levels by 2050. (www.climatechange.ca.gov) The order charged the Secretary of the California Environmental Protection Agency with the duty of coordinating oversight efforts to achieve these goals. The Secretary organized the Climate Action Team ("CAT"), which in March 2006 produced a report making recommendations to Governor Schwarzenegger and the California Legislature.

The CAT recommended the following to achieve the Governor's GHG goals:

- A multi-sector, market-based system that uses economic incentives to lower costs, protect economic growth, and promote innovation that is also inclusive of trading, emissions credits, auction and offsets;
- Mandatory emissions reporting from the largest sources;
- A multi-generational public education campaign to inform the public about climate change;
- A cost-effectiveness analysis based on current data should be performed;
- A continued implementation of the California Air Resources Board's vehicle climate change standards, as well as an aggressive alternative fuels program;
- Long-term commitments to new electricity generation for use in the State must come from sources with equivalent emissions less than a new combined cycle natural gas plant;

[3] The gases included in the initiative include carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons.

- Publicly-owned utilities must be held to the same standard as investor-owned utilities; and
- The establishment of emission reporting protocols for local governments.

Much of the criticism (www.srri.net) regarding the report issued by CAT derives from the fact that the report lacks documentation and transparency in providing a means to reach the ends that Governor Schwarzenegger established by his executive order. In a report prepared for the group Sustainable Environment and Economy in California ("SEE"), the Sacramento Regional Research Institute noted that the CAT study did not provide sufficiently extensive cost-benefit analyses. The SEE report contends that the CAT report appears to be more of an advocacy piece in favor of the governor's executive order rather than a hard analysis of the economic impacts of the proposed strategies. Overall, SEE argues that a more comprehensive and transparent cost-benefit analysis should have been provided by CAT in order to fully understand the potential economic impacts of these greenhouse gas emission reduction strategies.

***Southwest Climate Change Initiative***

Concerned about the potential impacts of climate change in the region, Arizona Governor Janet Napolitano and New Mexico Governor Bill Richardson signed an agreement to create the Southwest Climate Change Initiative on February 28, 2006. The two states will collaborate through their respective Climate Change Advisory Groups, to identify options for reducing greenhouse gas emissions and promoting climate change mitigation, energy efficient technologies and clean energy sources. Under the Southwest Climate Change Initiative, Arizona and New Mexico will also advocate for regional and national climate policies.

In the document establishing the Initiative, the Governors declare that "Southwestern states have particular concerns about the impacts of climate change and climate variability on residents, businesses and the environment, including the potential for prolonged drought, severe forest fires, warmer temperatures, increased snowmelt, reduced snowpack and other effects." (www.pewclimate.org).

***310 CMR 7.29: Massachusetts Multi-Pollutant Regulations***

310 CMR 7.29 covers six coal and oil fired generation stations in Massachusetts and as one of the aspects, regulates CO2 emissions from those facilities in two ways. One way is that from 2006 on, total CO2 emissions from these facilities are capped at average historical absolute emissions; the other is that from 2008 on, emissions are also capped at an emission rate of 1,800 lbs/MWHr. In December of 2005, MassDEP issued proposed amendments to the CO2 aspects of the 2001 version of 310 CMR 7.29 in order to provide clarity on offsets. It has yet to finalize these amendments.

***North Carolina Greenhouse Gas Inventory***

The state of North Carolina has completed a county by county inventory of greenhouse gases with detailed maps of all emission categories. This is phase one of a three phase process. Phase II includes an assessment of the most vulnerable areas of the state to climate change and phase III will include state specific mitigation strategies. The inventory includes inventories of carbon dioxide, methane, ozone depleting compounds, nitrous oxides and other trace gases.

**Renewables Portfolio Standards:**

In attempts to curb greenhouse gas emissions, states around the country are beginning to voluntarily adopt Renewables Portfolio Standards. These standards require that a certain percentage of power shall be supplied through the use of renewable sources such as wind, solar, geothermal, etc. The Pew Center on Global Climate change acknowledges that twenty-two states and the District of Columbia have implemented such standards, some offering economic incentives for such undertakings. State policies vary in language, ranging in renewables requirements from Massachusetts' 4% to California's 33% over a period of years. These requirements add up to significant cuts in GHG emissions. According to the U.S. Environmental Protection Agency's February 2002 memo on Renewables Portfolio Standards, Nevada, for example, has a target of 15% renewables by the year 2013. It is estimated that this standard will "by the year 2010… create 500 jobs cumulatively, produce about $150 million in wage and state tax revenue, and reduce $CO_2$ emissions by two million tons." (US EPA 2002) With the United States' failure to ratify the Kyoto Protocol, these Renewables Portfolio Standards offer a voluntary means for individual states to address GHG emissions and climate change concerns independently.

Participatory states to date:

| | | | | | |
|---|---|---|---|---|---|
| Nevada | California | Arizona | New Mexico | Hawaii | Massachusetts |
| District of Columbia | Iowa | Indiana | Illinois | Wisconsin | Montana |
| Texas | New York | Connecticut | Rhode Island | Vermont | Maine |
| New Jersey | Pennsylvania | Delaware | Maryland | Minnesota | Colorado |

**<u>States and Energy Efficiency</u>**

States are also implementing many policies that are driving energy efficiency into the marketplace, which has the result of avoiding greenhouse gas emissions that would otherwise been emitted if energy reductions had not been made. For example:

- States are making new commitments to energy efficiency as a resource by setting energy savings targets – in TX, IL, CA, CT, HI, NJ, PA – to name a few. Some examples:

- Texas was the leader in committing to setting goals for energy efficiency as part of their planned energy resource base. In 1999, the Texas Legislature passed a bill (SB 7) that introduced retail competition for some investor owned utilities and required the transmission and distribution utilities to administer energy efficiency programs to reduce their growth in demand by 10 percent.

- California and the Pacific Northwest are setting energy efficiency as the first priority, lowest cost new resource for long-term planning. California, developed a priority loading order for utilities in seeking additional generation, in which energy efficiency is the first resource utilities must pursue when making decisions about additional generation. Governor Schwarzenegger endorsed the *Energy Action Plan II* adopted in 2005 by the California Public Utilities Commission and the California Energy Commission. This plan established a "loading order" of preferred resources, placing energy efficiency as the state's top-priority procurement resource, and set aggressive long-term goals for energy efficiency. In addition, the state recognized the intimate connection between increased energy efficiency and reductions in greenhouse gases, so Governor Schwarzenegger's Climate Action Team is identifying and implementing strategies — including energy efficiency — to achieve the greenhouse gas emission reduction targets established in Executive Order S-3-05, issued by the Governor in June 2005. The energy efficiency measures in buildings alone are expected to reduce carbon dioxide emissions by 11 million tons by 2010.

Other states have declared "energy efficiency tax holidays, a day (or month) when purchasers of specific energy efficiency products or equipment receive a state sales tax break.

Regional efforts also are emerging to use energy efficiency as a means to moderate natural gas demand and decrease prices. For example, the Midwest Natural Gas Initiative (www.mwnaturalgas.org) is a cooperative effort by eight Midwestern states to develop a multi-state energy efficiency initiative to decrease natural gas consumption by 1% per year for five years. The Initiative is coordinated by the Midwest Energy Efficiency Alliance (MEEA), a Chicago-based non profit organization dedicated to advancing energy efficiency in order to support a sustainable economic development and promote environmental preservation. MEEA arranges logistics for meetings and conference calls, facilitates a dialogue between the Initiative stakeholders and serves as a resource of information for the Initiative's stakeholders. The Regulatory Assistance Project (RAP) and American Council for an Energy-Efficient Economy (ACEEE) also provides policy and technical support to the Initiative.

A steering committee directs and monitors the activities of the above Midwest Initiative. The steering committee consists of Midwest representatives of Public Service Commissioners as well as representatives from RAP, ACEEE and MEEA. The members of the steering committee guide the overall activities of the regional aspect of the Initiative, as well as inform and monitor the activities of each state's individual committee.

Each state's individual committee will consist of a representative from each of the parties signing the MOU from that particular state. The state committees are responsible for developing and implementing a state action plan that include policy and program recommendations for achieving the 1% per year reduction in natural gas consumption.

It is projected that the 1% reduction in natural gas consumption will cause wholesale natural gas prices to decrease by as much as 13%. And again, GHG emissions will be reduced as a co-benefit of the program.

***What are Local Governments Doing to Reduce GHG Emissions?***

Mayor Nickels of Seattle challenged mayors across the country to take local actions to reduce global warming pollution. His initiative resulted in ten mayors, representing more than 3 million Americans, issuing on March 30, 2005, a joint invitation to cities across the country to take concerted actions to significantly reduce global warming pollution. These ten mayors sent letters to more than 400 mayors in major U.S. cities, to join them in signing a Mayor's Climate Protection Agreement.

*Portland and Energy Efficiency* (www.theclimategroup.org)

In the northwest, Portland, Oregon has a strong history of natural resource stewardship and concern for local quality of life, and has developed an institutional framework well equipped to recognize and deal with big, long-range challenges.

When climate change became an issue in the late 1980s Portland was quick to react. In 1993, the city became the first local government in the US to adopt a plan to address global warming. It is also one of only a handful of cities that have set a target for wider city emissions rather than those associated just with local government. Since the climate change plan was introduced Portland has bucked the national trend by reducing per capita emissions of greenhouse gases by 13% while experiencing strong economic and population growth. The city has achieved this by focusing on a number of key areas including energy efficiency and green buildings, and transportation.

Energy efficiency has always been a priority for the city. Within the city government, an energy–management program called City Energy Challenge has reduced the city's energy bill by $11 million since 1991. Recently the city completed converting its traffic signals to highly efficient LED bulbs, an improvement that saves the City almost 5 million kWh per year and over $500,000 annually in energy and maintenance costs.

This energy efficiency work has been extended to the residential and business communities via the Energy Trust of Oregon. Founded in 2000 the trust administers energy efficiency and renewable energy programs for customers of the region's utilities. In its first 2 years the trust provided energy efficiency incentives to over 200 businesses and 14,000 Portland households, generating annual bill savings of $1.5 million.

The city has also established itself as a leader in the field of 'green building'. In 2000 Portland launched a program offering technical assistance, education and financial incentives for green building to the design, development and building communities and to homeowners. Since 2001 the City has provided technical and financial assistance to more than 300 local buildings.

Transportation currently accounts for over 40% of local greenhouse gas emissions in Portland and is therefore a critical area for action. A range of recent initiatives to make transportation more efficient has helped build on a history of progressive transportation planning in the city.

Portland is using carbon-offset funding to re-time traffic signals and improve traffic flows on local roads, limiting unnecessary braking, acceleration and idling and thus reducing

emissions from vehicles. City vehicle fleets also have changed with the City of Portland purchasing more than 30 highly fuel efficient hybrid vehicles since 2001. Indeed, on a per capita basis more hybrid vehicles are sold in the Portland area than anywhere else in the US. Overall, per capita gasoline use has fallen almost 10% since 1990, contributing over $40 million annually to the local economy.

Over the last 3 years a number of larger scale transportation projects have been implemented. Light rail lines to the airport and North Portland opened in 2001 and 2004 respectively and a central city streetcar also opened in 2001. These actions are aimed at reducing emissions and improving sustainability in the long term.

*Mayor's Climate Protection Agreement*

As of mid-September, 2006, 295 mayors representing over 49.4 million Americans in 42 states have signed the Agreement with a stream of additional cities continuing to join. (2) In Virginia, mayors of the cities of Alexandria, Charlottesville, Richmond, Virginia Beach, and Williamsburg have committed to the Mayor's Climate Protection Agreement. The U.S. Conference of Mayors at its 73rd Annual Meeting on June 13, 2005, in Chicago reinforced this action by endorsing the Mayor's Climate Protection Agreement unanimously.

In signing the Agreement, a mayor pledges her/his city to undertake three actions:

1) urge the federal and state governments to enact policies and programs to reduce greenhouse gas emissions by 7% from 1990 levels by the year 2012, a commitment that the U.S. government would assume if it were to ratify the Kyoto Protocol;

2) urge the U.S. Congress to pass bipartisan legislation to control greenhouse gas emissions nationally;

3) lead his/her city and community in reducing greenhouse gas emissions so as to be in compliance with the terms of the Kyoto Protocol.

*Efforts in Seattle*

While many mayors are early in the process of implementing these actions, some cities have made substantial progress in doing so. The City of Seattle is one of these. It has staked out a very proactive role in implementing the Mayor's Climate Protection Agreement. A Green Ribbon Commission on Climate Protection was appointed with high-level representation from all leadership sectors in the community.

A set of decision criteria were used by the Commission in developing, compiling and prioritizing its recommendations. Because Seattle's greenhouse gas inventory is dominated by emissions from the transportation sector, the list of recommendations to reduce greenhouse gas emissions is strongly focused on modifying the structure and operations of this sector.

Many of the above recommendations could be considered for urbanized areas in Virginia, and would seem to be congruent with our Governor's vision and strategy for managing Virginia's transportation challenges.

*Cities for Strong America Program*

The U.S. Conference of Mayor's at its May 2006 National Summit on Energy and the Environment released a report entitled, "Energy and the Environment Best Practices" as a part of its Cities for a Strong America program. This report is a compendium of responses made by cities to a survey on what on-the-ground actions cities are taking to deal with energy and environmental issues. It includes a section on climate change with the responses of eight cities in as many states. The most ambitious of these is that of Chapel Hill, NC, which is on track towards its goal of reducing its carbon emissions by 60% by 2050, with an intermediate goal by 2025. Chapel Hill has adopted this program with UNC-Chapel Hill as a partner with much of the planning work coming from the university's faculty and students. This is a good case study of how a municipal government and academic institution can partner in developing a climate response strategy. (9) Chapel Hill is the first U.S. city to adopt this ambitious of a carbon reduction goal, a goal modeled after that adopted by the Community Carbon Reduction (CRed) program begun at the University of East Anglia in England, except that the CRed goal is to achieve this 60% reduction by 2025.

The above described efforts by municipal governments in the U.S. are closely related to the Cities for Climate Protection Campaign of the International Council for Local Environmental Initiatives (ICLEI). The Cities for Climate Protection (CCP) campaign enlists cities to adopt policies and implement measures to achieve quantifiable reductions in local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability. In total, 674 local governments in 30 countries participate in the CCP, integrating climate change mitigation into their decision-making processes. ICLEI runs this highly successful and widely recognized campaign both regionally and nationally in Australia, Canada, Europe, Japan, Latin America, Mexico, New Zealand, South Africa, South Asia, Southeast Asia, and the United States. In Virginia, Arlington County is one of 152 local governments in the U.S. and 109 local governments in Canada participating in this program.

The CCP program is based on an innovative performance framework structured around five milestones that local governments commit to undertake. These are to:

1. Conduct a baseline emissions inventory and forecast.

2. Adopt an emissions reduction target for the forecast year.

3. Develop a Local Action Plan.

4. Implement policies and measures.

5. Monitor and verify results.

These milestones allow local governments to understand how municipal decisions affect energy use and how these decisions can be used to mitigate global climate change while improving community quality of life. The CCP methodology provides simple, standardized ways of acting to reduce greenhouse gas emissions, and for monitoring, measuring, and reporting performance.

Communities that participate in the CCP benefit from the actions that they take to reduce greenhouse gas emissions through:

- financial savings in reduced utility and fuel costs to the local government, households, and businesses,

- improved local air quality, contributing to the general health and well being of the community

- economic development and new local jobs as investments in locally produced energy products and services that keep money circulating in the local economy.

In addition, ICLEI provides regionally specific tools and technical assistance to assist local governments in reducing their greenhouse gas emissions.

This above summary of actions by local governments in the United States to reduce their greenhouse gas emissions is suggestive that this record of successes could be used to inform action at the local and state level in Virginia. Certainly, it is already demonstrated that local governments can be effective to some degree in reducing their climate impact footprint. Yet, other measures would require more of a regional or state-wide perspective in their development and implementation. It may be that stronger state agency and political leadership will be required to develop, coordinate and implement an effective program of climate protection in Virginia than would be the case in some other states, as much of the authority for indicated actions appears to reside primarily at the state level.